

CLAIMS

1. Assembly comprising a stabiliser and an instrument to be positioned in or around a passage surrounded by body tissue, in particular vascular tissue, wherein the stabiliser is provided with one or more suction nozzles running in the shape of a loop, which suction nozzles can be operationally connected to suction means in order to suck tightly to tissue close to and around said passage, which may still have to be made; wherein the instrument has a head section for performing operations on vascular tissue and wherein the stabiliser and the instrument are provided with, respectively, an instrument stop provided on the stabiliser and a stabiliser stop provided on the instrument, which, in the stop position when they are in contact with one another, unambiguously define the position of the head section with respect to the position of the loop shape.

2. Assembly according to Claim 1, wherein the instrument is an applicator for positioning and fixing a fixing device in or around the passage, the head section being equipped for carrying and releasing the fixing device.

3. Assembly according to Claim 1 or 2, wherein the stabiliser is provided with a guide on which the instrument stop is provided such that it can slide along the guide and with respect to which the instrument stop can be locked, wherein the guide has a direction of extension essentially transverse to the loop shape, and wherein the one or more suction nozzles running in the shape of a loop and the guide are firmly linked to one another in such a way that the mutual positions of the loop shape and guide are fixed with respect to one another.

4. Assembly according to Claim 3, wherein the guide is provided with a scale with a zero point and wherein the distance from the zero point to the loop shape is chosen such that when, the instrument stop is aligned with the zero point and the instrument stop and stabiliser stop are in the stop position, the head section, or at least a fixing device provided thereon, is located at the distal bottom end of the stabiliser.

5. Assembly according to one of the preceding claims, wherein the stabiliser comprises a working duct with the one or more suction nozzles running in the shape of a loop at the distal end.

6. Assembly according to Claim 5 in combination with Claim 3 or 4, wherein the guide is provided at the proximal end of the working duct.

7. Assembly according to Claim 5 or Claim 6, wherein at least one axial suction duct that joins the suction means to said one or more suction nozzles has been made in the wall of the working duct.

8. Assembly according to one of the preceding claims, wherein the one or more suction nozzles running in the shape of a loop comprise one or more axial suction nozzles opening in the axial direction viewed with respect to the loop shape.

9. Assembly according to one of the preceding claims, wherein the one or more suction nozzles running in the shape of a loop comprise one or more radial suction nozzles opening in the radially outward direction, viewed with respect to the loop shape.

10. Assembly according to one of the preceding claims, wherein the one or more suction nozzles running in the shape of a loop comprise one or more inclined suction nozzles opening outwards obliquely with respect to the axial direction, viewed with respect to the loop shape.

11. Assembly according to one of the preceding claims, wherein the one or more suction nozzles running in the shape of a loop comprise one or more radial suction nozzles opening in the radially inward direction, viewed with respect to the loop shape.

12. Assembly according to one of the preceding claims, wherein the part of the stabiliser that comprises the one or more suction nozzles running in the shape of a loop has a shape adapted to the shape of the tissue where the suction nozzle has to be positioned.

13. Assembly according to one of the preceding claims, wherein all or some of the one or more suction nozzles running in the shape of a loop are provided with segments that can be coupled to one another.

14. Assembly according to one of the preceding claims, wherein the part of the stabiliser that comprises the one or more suction nozzles running in the shape of a loop comprises at least two groups of suction nozzles that are not connected to one another, such that vacuum can be applied to the groups independently of one another.

15. Assembly according to one of the preceding claims, wherein the part of the stabiliser that comprises to one or more suction nozzles running in the shape of a loop can be completely or partially uncoupled from the rest of the stabiliser.

16. Assembly according to one of the preceding claims, wherein the suction nozzles are provided on at least two, preferably three, four or five or possibly more, segments defining the loop shape and wherein a number of said segments, preferably all said segments or all said segments bar one are adjustable in the radial direction, viewed with

respect to the loop shape, by means of an adjustment mechanism in order to constrict or widen the passage, after having sucked the tissue close to the passage tightly all round, by adjusting a number, in particular all, of the adjustable segments inwards or outwards, respectively.

- 5 17. Assembly according to one of the preceding claims, wherein the suction nozzles are provided on at least two, preferably three, four or five or possibly more, segments defining the loop shape and wherein a number of said segments, preferably all said segments or all said segments bar one can be adjusted with respect to one another by means of an adjustment mechanism, the movement of the adjustable segments describing a straight
10 or curved line in order to move the adjustable segments towards one another or away from one another by adjusting a number of, in particular all, the adjustable segments towards one another or, respectively, away from one another.

18. Assembly according to one of the preceding claims, wherein the loop shape has a ring-shaped or circular or ellipsoidal or oval-like or tubular or saddle-shaped or 3-fold sine
15 shaped or bean- or kidney-shaped contour.

19. Assembly according to one of the preceding Claims 2 - 18, comprising an applicator for, in particular provided with, a fixing device of the type having a tubular member, which member is provided with flange fingers arranged distributed around the periphery of the tubular member, in particular distal and optionally proximal flange fingers,
20 which flange fingers, in particular at least the distal flange fingers, preferably the distal and proximal flange fingers, can be or have been reversibly bent, against a resilient force, from a position projecting outwards with respect to the tubular member into a straightened position in which the projection of the respective flange fingers on a radial transverse surface of the tubular member is essentially on or within the periphery of said tubular
25 member.

20. Assembly according to one of the preceding Claims 2 - 18, comprising an applicator for, in particular provided with, a fixing device of the type comprising a tubular member provided with pins arranged distributed around the periphery, each pin being arranged on an arm that is attached by one end to the tubular member in a manner which
30 permits swinging about a hinge axis, and the arms and pins being movable, by swinging about the hinge axis, from an insertion position, in which they are located essentially inside the tubular member, into a fixing position in which at least the pins, viewed in the radial

direction, project outside the tubular member in order to penetrate the surrounding vessel wall tissue.

21. Assembly according to Claim 19 or 20, wherein the applicator comprises:

- an elongated support member with, at the distal end thereof, a support ring that fits
5 inside the tubular member of the fixing device, which support ring has an external peripheral surface suitable for supporting the tubular member;
- an obstructing member that can be moved parallel to the elongated support member from an obstructing position at least partially overlapping at least the straightened, distal flange fingers into a release position completely exposing said flange fingers.

10 22. Instrument, in particular intended for use with an assembly according to one of the preceding claims, comprising:

- an elongated support member comprising two, three or more gripper arms that run parallel to the support member, are arranged distributed around the support member and are fixed to the support member such that they can swing about a pivot point,
15 which gripper arms have free gripper ends that fit in a tubular member, it being possible to tilt the gripper arms with respect to the longitudinal axis of the support member about the pivot point between, on the one hand, a gripping position located radially outwards and gripping the tubular member by the outer surface of the gripper ends from the inside and, on the other hand, a release position moved radially inwards
20 that releases the tubular member; and
- an obstructing member in the form of a sleeve running around the gripper arms, which sleeve can be moved parallel to the gripper arms from an obstructing position surrounding the tubular member and straightened fingers, such as flange fingers, provided thereon, in the proximal direction into a release position completely exposing
25 the tubular member and flange fingers provided thereon.

23. Instrument according to Claim 22, wherein the gripper arms each comprise a distal arm section located on the distal side of the respective pivot point and a proximal arm section located on the proximal side of said respective pivot point, if the proximal arm sections are provided with tensioning means that hold the proximal arm sections together
30 towards one another in the radial direction, at least in the gripping position, and wherein the distal arm sections are each provided with a distal projection that faces radially outwards and extends into the wall of the sleeve; and wherein the sleeve is provided, per distal projection, with a distal longitudinal slot opening to the inside, in which, in the

gripping position, one distal projection extends in each case, the various features being such that when the sleeve is moved so far in the proximal longitudinal direction with respect to the gripper arms that the distal projections leave the longitudinal slots and the gripper ends move inwards in the radial direction to reach the release position.

5 24. Instrument according to Claim 23, wherein the tensioning means comprise a proximal projection per gripper arm, which proximal projection, in the gripping position, is in contact with the interior surface of the sleeve, and wherein the sleeve is provided, per proximal projection, with a proximal slot that in the gripping position is located a distal distance away from said proximal projection and opens to the inside, or at least a local
10 widening of the interior of the sleeve, in which slot or widening said respective proximal projection can be accommodated when the gripper arms reach the release position.

25. Instrument according to one of Claims 22 - 24, wherein the support member and the sleeve are secured against mutual rotation about the common longitudinal axis by securing means and wherein the proximal end of the support member and the proximal end
15 of the sleeve are joined to one another by screw means comprising a threaded bolt, such that turning of the threaded bolt results in movement of said sleeve and said support member in the longitudinal direction with respect to one another.

26. Instrument intended in particular for use with an assembly according to one of Claims 1 - 19, wherein the instrument is an applicator (310) in accordance with one of
20 Claims 1 - 16 of NL Patent 1018302 which is provided with a stabiliser stop (19).

27. Ring prosthesis comprising:

- anchoring zones arranged distributed around the periphery of the ring prosthesis with anchoring means, such as suture-fixing means, suture passages or anchoring members
273, 274; and
- 25 • resilient zones located between the anchoring zones, which resilient zones are provided with resilient means which act to allow enlargement of the periphery of the ring prosthesis, overcoming resilience, when a force directed radially outwards is exerted on one or more of the anchoring zones.

28. Ring prosthesis according to Claim 27, wherein the resilient means comprise
30 spring members.

29. A ring prosthesis comprising a ring having, at the periphery, a number of fixing projections which project radially outwards with respect to the ring and on which one or more transverse bars are arranged for fixing staples.

30. A ring prosthesis according to Claim 29, comprising staples that are provided such that it is possible to fire them all in at the same time or at least to fire in a number at the same time.

31. A ring prosthesis according to Claim 29, comprising staples that are provided
5 on the fixing projections such that each staple forms a deformable transverse bar.

32. Stabiliser head comprising a loop shape of one or more suction nozzles, which stabiliser head is intended for a stabiliser for an assembly according to one of Claims 1 - 21, wherein the stabiliser head can preferably be uncoupled from the stabiliser.

33. Stabiliser head according to Claim 32, containing adhesive, in particular tissue
10 adhesive, close to, along and/or at the location of the suction nozzles in the shape of a loop.

34. Stabiliser head according to Claim 33, wherein the adhesive is provided on the surface in which the suction nozzles are provided and wherein the adhesive is provided close to, along and/or at the location of the loop shape, in particular close to, along and/or at the location of the entire loop shape.

35. Stabiliser head according to one of Claims 32 - 34, wherein the surface in which
15 the suction nozzles are located has a shape adapted to the shape of the predetermined tissue to which the suction nozzles will suck tightly when using the stabiliser head and applying vacuum.

36. Stabiliser head according to Claim 35, wherein said shape is a negative of said
20 predetermined tissue.

37. Adhesive joining accessory, comprising at least one nozzle and at least one connection, wherein each connection is in fluid communication with at least a number of the nozzles, as well as containing adhesive, in particular tissue adhesive, provided close to, along and/or at the location of at least a number of said nozzles.

38. Adhesive joining accessory, preferably according to Claim 37, wherein the at
25 least one nozzle and at least one connection comprise at least one suction nozzle and at least one vacuum connection, as well as at least one adhesive nozzle and at least one adhesive connection, wherein each vacuum connection is in fluid communication with at least a number of the suction nozzles and wherein each adhesive connection is in fluid
30 communication with at least a number of said adhesive nozzles, wherein the adhesive nozzles are preferably provided close to, along, at the location of or coincident with the suction nozzles.

39. Adhesive joining accessory according to Claim 37 or 38, wherein the adhesive or the at least one adhesive nozzle is provided on the surface in which the at least one suction nozzle is provided.

5 40. Adhesive joining accessory according to one of Claims 37 - 39, wherein the surface in which the at least one suction nozzle and the adhesive or at least one adhesive nozzle is located has a shape adapted to the shape of the predetermined tissue to which the at least one suction nozzle will suck tightly when vacuum is applied.

41. Adhesive joining accessory according to Claim 40, wherein the shape is a negative of said predetermined tissue.

10 42. Adhesive joining accessory according to one of Claims 37 - 41, wherein a number of said adhesive joining accessories, preferably all said adhesive joining accessories regarded with respect to one another, are adjustable in the radial direction or according to a straight or curved line by means of an adjustment mechanism in order to adjust the adhesive joining accessories away from one another and/or towards one another.

15 43. Assembly according to one of Claims 1 - 21, wherein at least one sensor is provided on, in or at one or more components of the assembly.

44. Assembly according to Claim 43, wherein the at least one sensor is in the shape of a loop on, at or close to the stabiliser and/or instrument, preferably at the distal end thereof.

20 45. Assembly according to one of Claims 1 - 21, 43 or 44, wherein at least one marker for interaction with navigation means is provided on, in or at one or more components of the assembly and/or tissues in or around a passage surrounded by body tissue, in particular vascular tissue.

25 46. Assembly according to Claim 45, wherein the at least one marker is provided in the shape of a loop, preferably at the distal end of the stabiliser and/or of the instrument, and/or in or around a passage surrounded by body tissue, in particular vascular tissue.

47. Method for positioning markers, wherein use is made of an assembly according to one of Claims 1 - 21 or 43 - 46 for permanently or temporarily positioning markers at the location of the body tissues.

30 48. Use of an assembly according to one of Claims 1 - 21 or 43 - 46, wherein navigation means are used and wherein, while observing at least one marked component of the assembly and/or tissue, said at least one component and/or tissue are moved and/or positioned with respect to one another.

49. Use according to Claim 48, wherein use is also made of at least one sensor according to Claim 43 or 44.

50. Use according to Claim 48 or 49, wherein at least one marker according to one of Claims 45 - 47 is used.

51. Navigation method intended for an intervention in the human or animal body, comprising moving and/or positioning at least two marked accessories and/or tissues with respect to one another.

52. Navigation method according to Claim 51, wherein at least one of the tissues is located in or around a passage surrounded by body tissue, in particular vascular tissue.

53. Navigation method according to Claim 51 or 52, wherein use is made of one or more sensors.

54. Navigation method according to one of Claims 51 - 53, wherein use is made of one of more sensors in the shape of a loop.

55. Navigation method according to one of Claims 51 - 54, wherein use is made of at least one sensor according to Claim 43 or 44.

56. Navigation method according to one of Claims 51 - 55, wherein use is made of at least one marker.

57. Navigation method according to one of Claims 51 - 56, wherein use is made of one or more markers in the shape of a loop.

58. Navigation method according to one of Claims 51 - 57, wherein use is made of at least one marker according to one of Claims 45 - 47.
